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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/670,355	09/26/2003	Ryoji Okada	500.43169X00	5269
20457	7590	08/25/2006	EXAMINER	
ANTONELLI, TERRY, STOUT & KRAUS, LLP 1300 NORTH SEVENTEENTH STREET SUITE 1800 ARLINGTON, VA 22209-3873			SINGH, DALZID E	
			ART UNIT	PAPER NUMBER
			2613	

DATE MAILED: 08/25/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

A

Office Action Summary

Application No.

10/670,355

Applicant(s)

OKADA ET AL.

Examiner

Dalzid Singh

Art Unit

2613

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 26 September 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-9 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-9 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 15 June 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|-----------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Information Disclosure Statement

1. The information disclosure statement filed 26 September 2003 fails to comply with 37 CFR 1.98(a)(1), which requires the following: (1) a list of all patents, publications, applications, or other information submitted for consideration by the Office; (2) U.S. patents and U.S. patent application publications listed in a section separately from citations of other documents; (3) the application number of the application in which the information disclosure statement is being submitted on each page of the list; (4) a column that provides a blank space next to each document to be considered, for the examiner's initials; and (5) a heading that clearly indicates that the list is an information disclosure statement. The information disclosure statement has been placed in the application file, but the information referred to therein has not been considered.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 5-7 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 5 recites the variable "N" which is not defined. For example, N is an integer.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. Claims 5-7 are rejected under 35 U.S.C. 102(e) as being anticipated by Hunts et al (US Patent No. 6,610,974).

Regarding claim 5 (as far as understood), Hunts et al disclosed an optical switch optically positioned between N input-side optical fibers and N output-side optical fibers to switch communication light beams propagating through said optical fibers (as shown in Fig. 3), comprising:

an input-side lens array (74) including a plurality of lenses optically coupled to said input-side optical fibers;

an output-side lens array (76) including a plurality of lenses optically coupled to said output-side optical fibers;

a primary mirror array (84) having a plurality of mirrors swingably supported to reflect communication light beams from said input-side lenses; and

a secondary mirror array (86) having a plurality of mirrors swingably supported to reflect the communication light beams reflected from said primary mirror array, wherein the number of said input-side lenses is $N+2$ or more, the number of said output-side lenses is $N+2$ or more, the number of mirrors of said primary mirror array is $N+2$ or more and the number of mirrors of said secondary mirror array is $N+2$ or more (Fig. 3 shows plural lenses and mirrors).

Regarding claim 6, shown in Fig. 2 and discussed col. 3, lines 27-52 of Hunts et al disclose light receiving elements (detectors) and a mirror control unit for controlling positions of the mirrors on the basis of signals from said light receiving elements, wherein each of said input-side lens array and said output-side lens array has a plurality of lenses optically coupled to said light receiving elements and each of said primary mirror array and said secondary mirror array has a plurality of mirrors optically coupled to said light receiving elements.

Regarding claim 7, wherein said mirror control unit includes a mechanism for correcting, on the basis of any of a relative position between said input-side lens array and said primary mirror array, a relative position between said primary mirror array and said secondary mirror array and a relative position between said secondary mirror array and said output-side lens array, control values adapted to control mirrors of said mirror

arrays (shown in Fig. 2 and discussed col. 3, lines 27-52).

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 1-4, 8 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hunt et al (US Patent No. 6,610,974) in view of Cannell (US Patent No. 6,519,383).

Regarding claim 1, Hunt et al disclose optical switch for switching communication light beams propagating through a plurality of optical fibers (as shown in Fig. 3), comprising:

a plurality of input-side lenses (74) to which input light beams connect optically;
a plurality of moving mirrors (84 and 86) to which said light beams passing through said input-side lenses connect optically;

a plurality of output-side lenses (76) to which said light beams going by way of said moving mirrors connect optically; and,

wherein said plurality of input-side lenses include first input-side lenses to which communication light beams coming from first external units and propagating through input-side optical fibers connect optically and second input-side lenses to which the light

beams, and wherein said plurality of output-side lenses include first output-side lenses for causing light beams passing therethrough to optically connect to second output-side optical fibers adapted to propagate the communication light beams to second external units and second output-side lenses (see Figs. 2 and 3).

Hunt et al teach the use of test light for calibration of the optical switch (see col. 9, lines 29-56) and differ from the claimed invention in that Hunt et al do not disclose the use of light emitting and receiving units. Cannell teach the use of light source and detector array for testing operation of photonic switch. Therefore, it would have been obvious to an artisan of ordinary skill in the art at the time the invention was made to provide the optical switch system of Hunts et al with a light emitting and receiving device as taught by Cannel. One of ordinary skill in the art would have been motivated to do such in order to provide optimum performance of the optical switch.

Regarding claim 2, as shown in Fig. 2 and discussed col. 3, lines 27-52 of Hunts, the combination shows a mirror control unit for correcting, on the basis of signals from said light receiving units to which the light beams passing through said second input-side lenses and said second output-side lenses connect optically, control values adapted to control angles necessary to move said moving mirrors to which the light beams passing through said first input-side lenses connect optically.

Regarding claim 3, Hunts et al disclose an optical switch for switching communication light beams propagating through a plurality of optical fibers (as shown in Fig. 3), comprising:

a plurality of input-side lenses (74) to which input light beams connect optically;
a plurality of moving mirrors (84 and 86) to which said light beams passing through said input-side lenses connect optically;

a plurality of output-side lenses (76) to which said light beams going by way of said moving mirrors connect optically; and,

wherein said plurality of moving mirrors include a plurality of first moving mirrors to which communication light beams coming from first external units and propagating through input-side optical fibers connect optically and a plurality of second moving mirrors to which the light beams connect optically (see Figs. 2 and 3).

Hunt et al teach the use of test light for calibration of the optical switch (see col. 9, lines 29-56) and differ from the claimed invention in that Hunt et al do not disclose the use of light emitting and receiving units. Cannell teach the use of light source and detector array for testing operation of photonic switch. Therefore, it would have been obvious to an artisan of ordinary skill in the art at the time the invention was made to provide the optical switch system of Hunts et al with a light emitting and receiving device as taught by Cannel. One of ordinary skill in the art would have been motivated to do such in order to provide optimum performance of the optical switch.

Regarding claim 4, shown in Fig. 2 and discussed col. 3, lines 27-52 of Hunts et al, the combination shows a mirror control unit for correcting, on the basis of signals from said light receiving units to which the light beams going by way of said second

moving mirrors connect optically, control values adapted to control angles necessary to move said plurality of first moving mirrors.

Regarding claim 8, Hunt et al disclose method of controlling an optical switch adapted to switch communication light beams propagating through a plurality of optical fibers (as shown in Fig. 3),

wherein said switch has a plurality of input-side lenses (74) to which input light beams connect optically,

a plurality of moving mirrors (84 and 86) to which said light beams passing through said input-side lenses connect optically,

a plurality of output-side lenses (76) to which said light beams going by way of said moving mirrors connect optically,

said plurality of moving mirrors including a plurality of first moving mirrors to which communication light beams coming from first external units and propagating through input-side optical fibers connect optically and a plurality of second moving mirrors to which measuring light beams connect optically, and light receiving elements to which said measuring light beams going by way of said plurality of second moving mirrors connect optically, said control method comprising the steps of detecting the light beams and connecting optically to said light receiving elements by way of said second moving mirrors; and controlling said first moving mirrors on the basis of the detected light beams (shown in Fig. 2 and discussed col. 3, lines 27-52).

Hunt et al teach the use of test light for calibration of the optical switch (see col. 9, lines 29-56) and differ from the claimed invention in that Hunt et al do not disclose the use of light emitting and receiving units. Cannell teach the use of light source and detector array for testing operation of photonic switch. Therefore, it would have been obvious to an artisan of ordinary skill in the art at the time the invention was made to provide the optical switch system of Hunts et al with a light emitting and receiving device as taught by Cannel. One of ordinary skill in the art would have been motivated to do such in order to provide optimum performance of the optical switch.

Regarding claim 9, wherein a plurality of light receiving units are provided, light beams coming from said light emitting elements and connecting optically to said plurality of light receiving units by way of said second moving mirrors are detected and on the basis of the detected light beams, control values adapted to control angles necessary to move said first moving mirrors are corrected (see col. 9, lines 29-56).

Conclusion

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Smith et al (US Pub. No. 2002/0071627) is cited to show optical switch.

Mori et al (US Patent No. 6,711,314) is cited to show optical switch control.

Dickson (US Patent No. 6,556,285) is cited to show optical beam alignment detection and control.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dalzid Singh whose telephone number is (571) 272-3029. The examiner can normally be reached on Mon-Fri 9am - 5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jason Chan can be reached on (571) 272-3022. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

DS
August 21, 2006

Dalzid Singh